

Key

CH. 14 & 15 PRACTICE

Complete the following from the book:

p. 338 #1, 11, 13, 15, 20, 22, 25, 27, 32

p. 361 #2, 5, 8, 11, 19, 20, 22

- see teacher book!

More practice..... remember to write everything in correct notation!!

$n = 45$

A random sample of students at a local high school finds 8 juniors that have only Calculus, 9 juniors that have only Statistics, 6 juniors that have both Calculus and Statistics, 10 seniors that have only Calculus, and 12 seniors that have only Statistics. If a student is randomly selected what is the probability that they are:

1. A junior
 $P(J) = \frac{23}{45}$

2. A senior
 $P(S_n) = \frac{22}{45}$

3. In Calculus
 $P(C) = \frac{24}{45}$

4. In Statistics
 $P(S_t) = \frac{27}{45}$

5. A senior in Statistics
 $P(S_n \cap S_t) = \frac{12}{45}$

6. A junior in Calculus
 $P(J \cap C) = \frac{14}{45}$

7. A senior or in Statistics

8. A junior or in Calculus

$$P(S_n \cup S_t) = \frac{37}{45}$$

$$P(J \cup C) = \frac{33}{45}$$

On a college campus a sample survey is taken by students in the student union. 130 students are surveyed. Of those surveyed 83 were women, 42 said they currently own a credit card, and 22 of the women surveyed owned a credit card. If a student is randomly selected what is the probability that they are: (use a venn diagram)

1. A woman
 $P(W) = \frac{83}{130}$

2. A man
 $P(W^c) = \frac{P(M)}{130} = 1 - \frac{83}{130} = \frac{47}{130}$

3. Own a credit card
 $P(CC) = \frac{42}{130}$

4. Doesn't own a credit card
 $P(CC^c) = \frac{88}{130}$

5. A woman and owns a credit card

$$P(W \cap CC) = \frac{22}{130}$$

6. A woman or owns a credit card

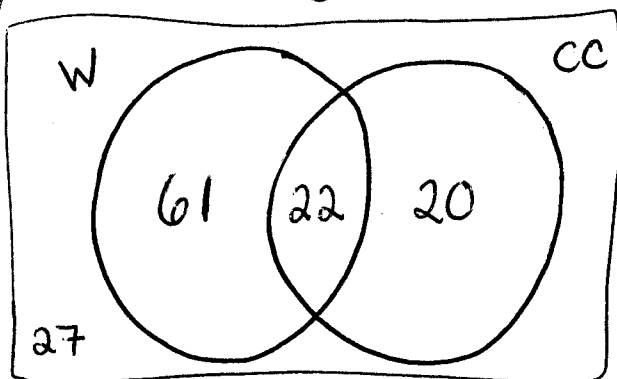
$$P(W \cup CC) = \frac{103}{130}$$

7. A man that doesn't own a credit card

8. A man or doesn't own a credit card

$$P(M \cap CC^c) = \frac{27}{130}$$

$$P(W^c \cup CC^c) = \frac{108}{130}$$



The student council is thinking about holding a school dance as a fundraiser. In order to determine if the event will be profitable, representatives survey 60 students in the school. 32 girls were interviewed, 40 said that they would attend, 27 were girls that said they would attend. If a student is selected at random, what is the probability that the student is:

1. A girl $P(G) = 32/60$

2. Attending the school dance $P(A) = 40/60$

3. A boy $P(G^c) = 28/60$

4. Not attending the school dance $P(A^c) = 20/60$

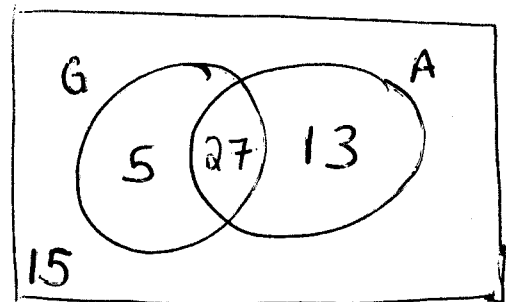
5. A girl attending the dance $P(G \cap A) = 27/60$

6. A girl or attending the dance $P(G \cup A) = 45/60$

7. a boy not attending the dance $P(G^c \cap A^c) = 15/60$

8. A boy or not attending the dance $P(G^c \cup A^c) = 33/60$

9. A girl or not attending the dance $P(G \cup A^c) = 47/60$



Use the probability rules to answer the following questions:

1. If $P(W) = 0.57$ and $P(R) = 0.30$ and $P(W \cap R) = 0.17$, find the following:

a. $P(W \cup R) = P(W) + P(R) - P(W \cap R) = 0.70$

b. $P(R|W) = \frac{P(W \cap R)}{P(W)} = \frac{0.17}{0.57} = 0.298$

c. Are W and R disjoint events? Why or why not? no. $P(W \cap R) \neq 0$

d. Are W and R independent? Why or why not? no. $P(R|W) \neq P(R)$

2. If $P(M) = 0.42$, $P(J) = 0.31$ and M and J are disjoint, what is the probability of M or J?

$$P(M \cup J) = 0.42 + 0.31 = 0.73$$

3. If $P(O) = 0.61$, $P(H) = 0.23$ and O and H are independent, what is the probability of O and H?

$$P(O \cap H) = P(O) \cdot P(H) = 0.1403$$

4. If $P(F) = 0.41$ and $P(Z) = 0.19$ and $P(Z|F) = 0.22$, find the following:

a. $P(F \text{ and } Z) = P(F \cap Z) = P(Z|F) \cdot P(F) = 0.0902$

b. $P(F \text{ or } Z) = P(F \cup Z) = P(F) + P(Z) - P(F \cap Z) = 0.5098$